4. RAIL DEVELOPMENT IN THE U.S.

4.1. FRA Requirements

This Chapter of the Virginia Statewide Rail Plan (VSRP) presents information related to Virginia's Transportation Network in historical context. This is not a requirement of 49 CFR § 266.15.

4.2. The Rail Network

The history of American railroads can generally be divided into five historical phases based upon total railroad track mileage: 1) rapid growth 2) steady growth 3) Golden Age of Railroading 4) decline and 5) the Rail Renaissance.

4.2.1. Period of Rapid Growth

Between 1825 and 1850, American railroads grew quickly – from 23 miles in 1830; to 2,818 miles in 1840; to 9,021 miles in 1850. In 1860 mileage had tripled to over 30,635 miles. In the final 50 years of the nineteenth century, railroad mileage was increasing every decade, growing to 52,914 miles in 1870; 92,296 miles in 1880; and 163,597 miles in 1890.

4.2.2. Period of Steady Growth

In the early 1900s, the era of rapid growth had ended. Most of the railroad lines that exist today had been built. In 1900 the total mileage equaled 193,346 miles and in 1908 it stood at 231,540 miles. More than 90 percent of all railroad lines were owned and operated by a small group of very large railroads, which were designated by the Interstate Commerce Commission as Class I railroads. Three classes of railroads were established (Classes I, II and III) based on annual revenues, with the minimum threshold changing over the years.

4.2.3. Golden Age of Railroading

Class I railroad mileage reached a leveling-off period between 1920 and the 1950s. It stood at 229,530 miles in 1929, 220,915 miles in 1939, 214,486 miles in 1947 and 211,459 miles in 1955. From this point forward, railroad locations would remain essentially unchanged with only occasional minor modifications. This period was to become known as the golden age of American railroading, when passenger travel by rail was routine for most of the population and the railroads were seen as an essential component of the American economy.

4.2.4. Decline

The 1950s & 60s saw the exponential increase in the use of the automobile and the subsequent creation of the nation's vast interstate highway system by the federal and state governments. The new highway system had a profound impact on land use. The period also saw the development of a cost-effective and time efficient aviation system in which airports – also developed by federal and state governments - and airlines provided passenger services between major cities throughout the nation. As a result of automobile and airline developments, there was a dramatic change in America's railroad system. The decade was

characterized by the collapse and consolidation of many railroads, and by the abandonment of passenger service by nearly all of the surviving railroads.

In May 1971, after years of evaluation and planning, the National Rail Passenger Corporation (better known as Amtrak) assumed control of virtually every mile of non-commuter passenger service in America. Beginning in the 1960s, the total railroad mileage of the Class I rail lines fell dramatically and entered a period of rapid decline. In 1960, total Class I rail mileage stood at 207,334; then declined to 196,479 in 1970 and to 164,282 miles in 1980.

Prior to 1980, the railroad industry was a highly regulated industry. As noted in a U.S. Department of Transportation report in 1978, "The current system of railroad regulation … is a hodge-podge of inconsistent and often anachronistic regulations that no longer correspond to the economic condition of railroads, the nature of intermodal competition, or the often-conflicting needs of shippers, consumers, and taxpayers." In 1980, Congress passed the Staggers Act which significantly deregulated the industry and allowed railroads to operate much like other businesses in managing their assets and pricing their services. The Staggers Act allowed railroads to price competing routes and services differently, to enter into confidential contracts with their shippers, and to earn adequate revenues for their services.

The decline in rail mileage slowed in the early 1990s and in the last decade, there has been a leveling-off of railroad mileage. In 1990 rail mileage stood at 119,768 miles; 116,626 miles in 1991; 108,264 miles in 1995; 99,430 miles in 1999; and in 2007, Class I rail mileage stood at 94,112. A chart of the history of Class I freight railroad miles operated in the United States is shown in Figure 4-1.

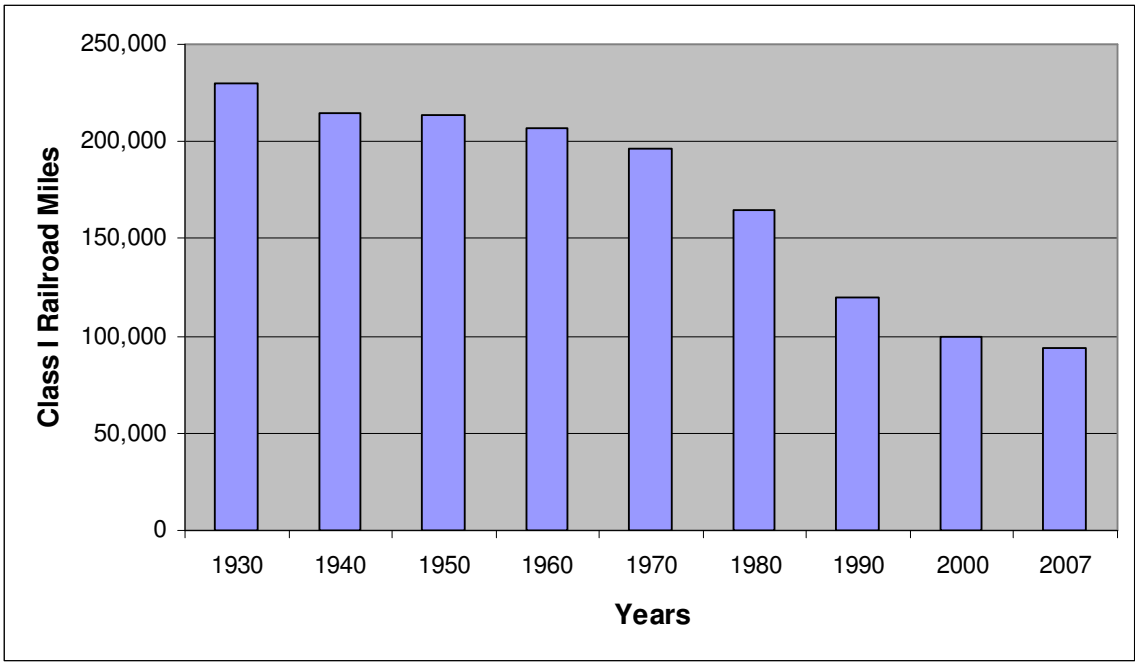

Figure 4 - 1 History of Class I Freight Railroad Miles Operated in the U.S.

4.2.5. Rail Renaissance

By the early 1990s, years of mergers and acquisitions had reduced the number of major Class I railroads in the United States to seven: the Burlington Northern (23,356 miles); Union Pacific (21,882 miles); CSX (19,565 miles); Norfolk Southern (15,955 miles); Southern Pacific (15,023 miles); Conrail (13,068 miles); and the Atchison, Topeka & Santa Fe (11,266 miles). In the late 1990s, the list was further reduced to four Class I railroads in the United States. In 1995, the Burlington Northern and the Atchison, Topeka & Santa Fe merged to form the Burlington Northern Santa Fe (BNSF). In 1996, the Union Pacific absorbed the Southern Pacific, and in 1998, CSX and Norfolk Southern divided and took over the operations and assets of Conrail.

As the Class I Railroads merged and consolidated their infrastructure, existing lines were abandoned or sold. New segment of the Rail Industry experienced a period of explosive growth as the surplus lines from the Class I Railroads were purchased by smaller local Shortline and Regional railroads, the Class II and III. These railroads were economically able to serve communities and shippers that the Class I railroads were too big to serve.

The new companies that resulted from the Class I mergers were larger and stronger and had the ability to use their infrastructure to take advantage of the globalization of the US economy and the resulting growth in shipping.

Implementation of the North American Free Trade Agreement (NAFTA) began in 1994 with all of the agreement provisions to be completed by 2008. This agreement removed most barriers to trade and investment among the United States, Canada, and Mexico and had a significant impact on rail freight operations in North America.

Some of the effects of the NAFTA agreement are:

- Trade with Latin and South America passes through ports, which in turn passes to truck and rail.
- 55 percent of the tonnage moving across the Mexican border is by rail.
- Latin American trade is expected to increase three-fold over the next 20 years.
- The transportation modes, like rail, that move bulk shipments are critical to economic and trade development.

Figure 4-2 shows the modal choices for major sectors alliance trade with Latin America. It can be seen that rail is the primary choice for transport of agriculture and natural resource freight.

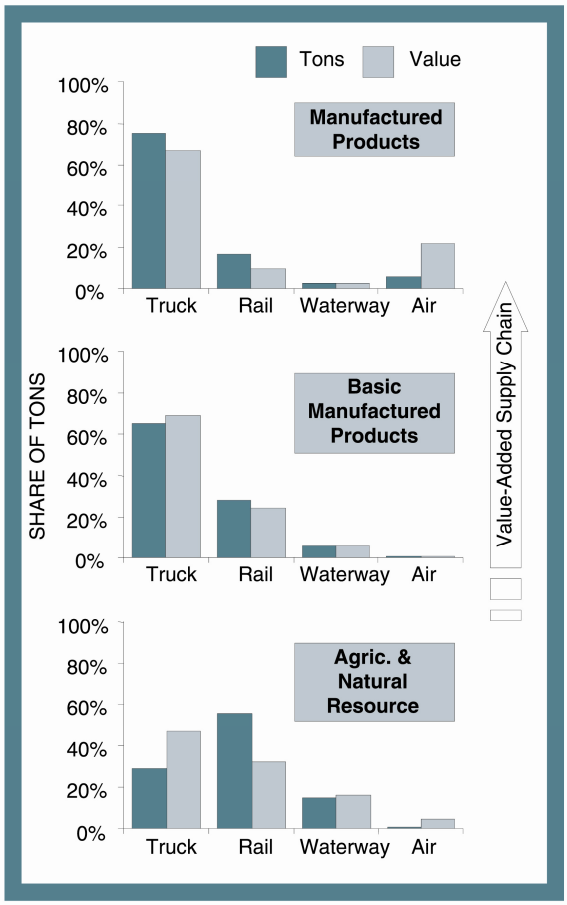

Figure 4 - 2 Modal Choices for Major Sectors Alliance Trade with Latin America

4.3. Freight Rail in the United States

According to the American Association of Railroads the current Class I freight railroads in North America are: two Canadian railroads - the Canadian National Railway (CN) and Canadian Pacific Railway; two Mexican railroads - Ferrocarril Mexicano and Kansas City Southern de México: and seven U.S. railroads, BNSF Railway, CSX Transportation, Grand Trunk Corporation, Kansas City Southern Railway, Norfolk Southern, Soo Line Railroad, and the Union Pacific Railroad. A map of the rail system in the U.S. is shown in Figure 4-3.

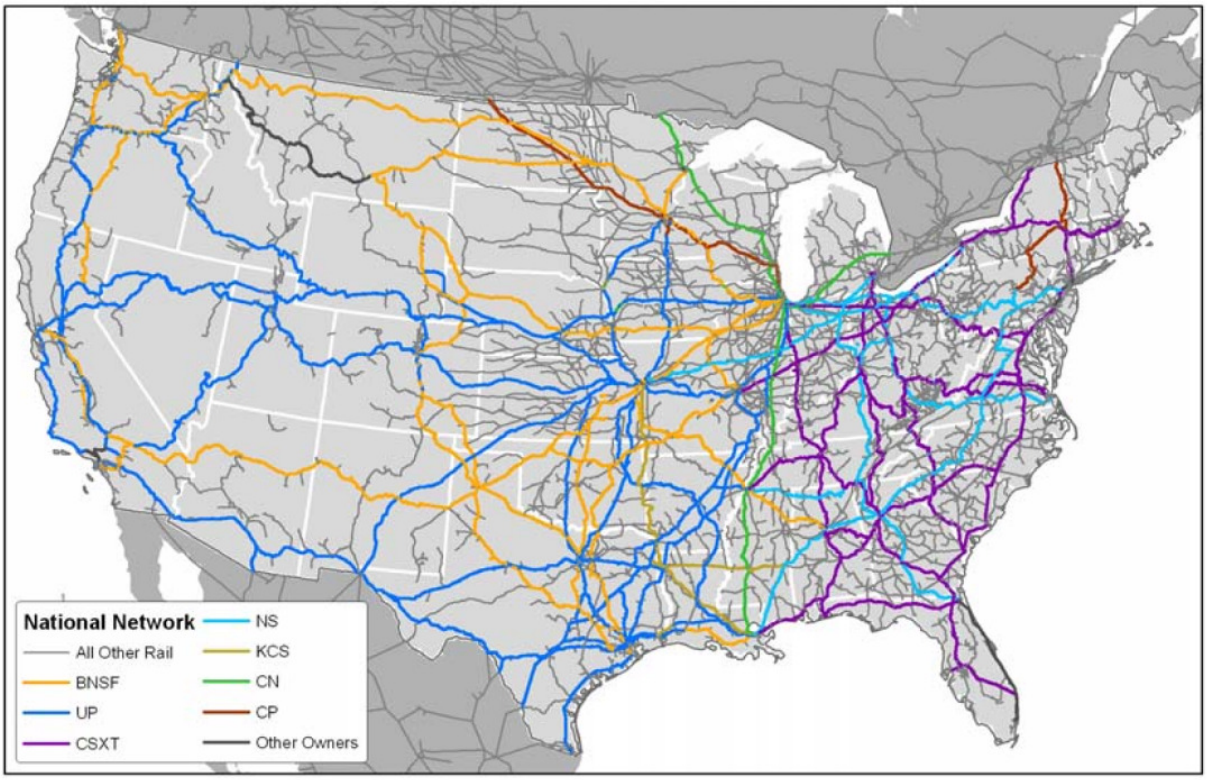

Figure 4 - 3 National Rail Network

The tons of annual cargo carried by the North American Class I railroads in 2006 are presented in Figure 4-4. The largest carriers in terms of annual tonnage in 2006 were BNSF Railway with 539.5 million tons and Union Pacific Railroad with 514.4 million tons.

Although miles of operated railroads declined significantly in the early 1900's, the freight carried by the railroads has dramatically increased – particularly after the Staggers Act of 1980. Figure 4-5 indicates the increase in ton-miles (total tons of annual cargo carried divided by the total rail miles) of the national rail system along with the concurrent decline in Class I freight railroad miles operated in the United States. Similar to highway congestion, where more vehicles are currently using the same number of lanes built in the past, railroads are also facing capacity constraint issues with more cargo being carried using the same amount of track miles as in the past. In 2007, approximately 1.8 trillion ton-miles of rail traffic occurred in the United States.

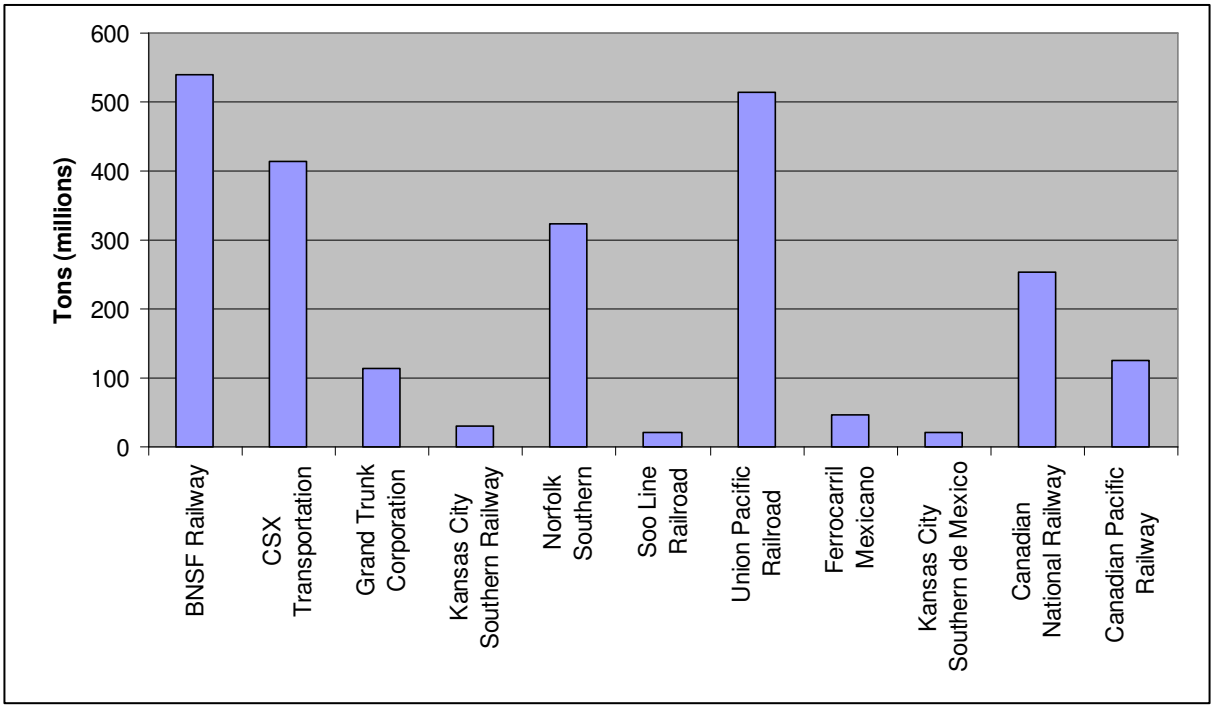

Figure 4 - 4 North American Class I Railroad Tonnage (2006)

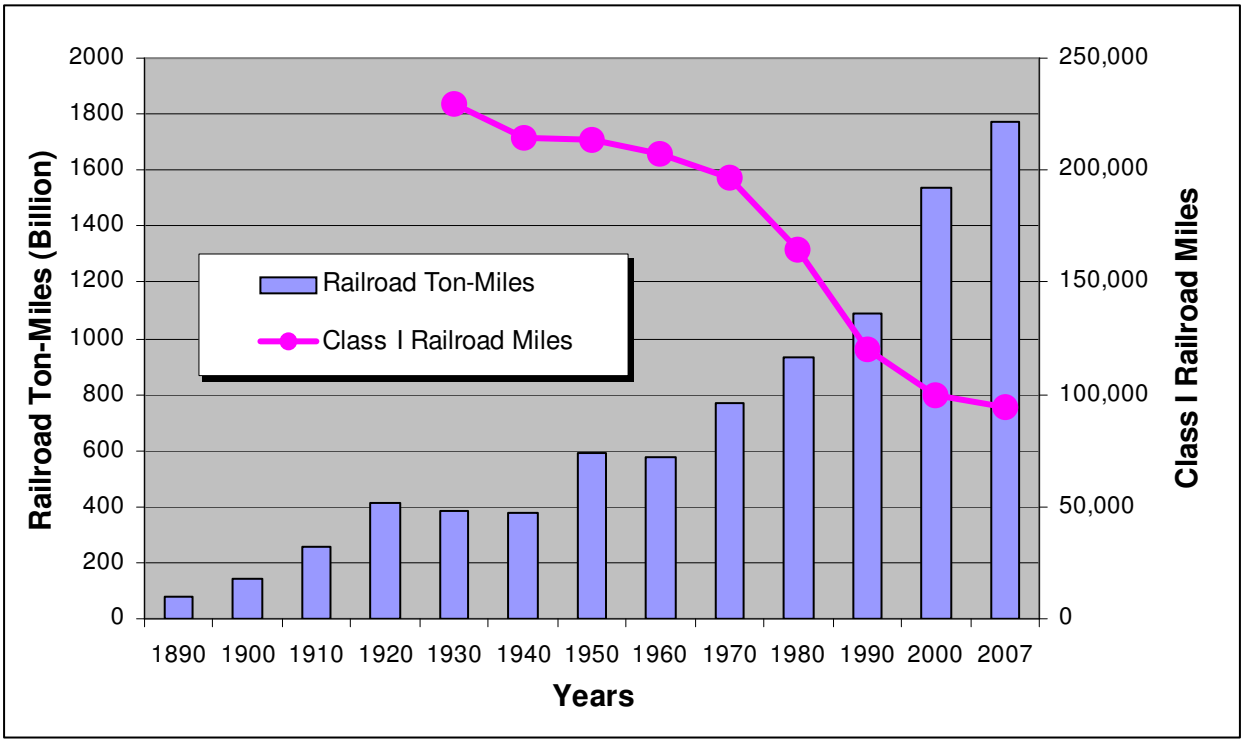

Figure 4 - 5 History of Freight Railroad Ton-Miles and Class I Railroad Miles

4.4. Passenger Rail in the United States

4.4.1. Amtrak Intercity Rail

According to data in the Association of American Railroads (July 2004) Overview of U.S. Freight Railroads Report, prior to Amtrak's creation by the Rail Passenger Service Act of 1970, intercity passenger rail service in the United States was provided by the same railroad companies that provided freight service. Intercity rail is a long distance passenger rail transportation system between at least two central cities. When Amtrak was formed, in return for government permission to exit the passenger rail business (and avoid the hundreds of millions of dollars in annual losses from passenger operations most Class I railroads were forced to incur), freight railroads donated passenger equipment to Amtrak and provided start-up assistance with a capital infusion of some $200 million. Today, Amtrak is the main U.S. intercity passenger rail carrier in the continental United States. It has operated a similar national network since the 1970s.

The majority of the 22,000 or so miles over which Amtrak operates are actually owned by the Class I freight railroads. (Amtrak owns approximately 750 miles of railroad, primarily from Boston to Washington, D.C., known as the Northeast Corridor). By law, freight railroads must grant Amtrak access to their track upon request and give priority status to Amtrak trains over other customers. Amtrak pays fees to freight railroads to cover the incremental costs of Amtrak's use of freight railroad tracks.

In 2009, Amtrak carried 27.2 million passengers, and experienced its eighth straight year of record passenger demand. Figure 4-6 displays Amtrak's annual ridership for each year since its inception in 1971 through to 2009. With increased fuel prices during 2008, Amtrak ridership spiked to a record 28.7 million passengers. Ridership in 2009 fell 5.2 percent below 2008 record levels but still higher than 2007.

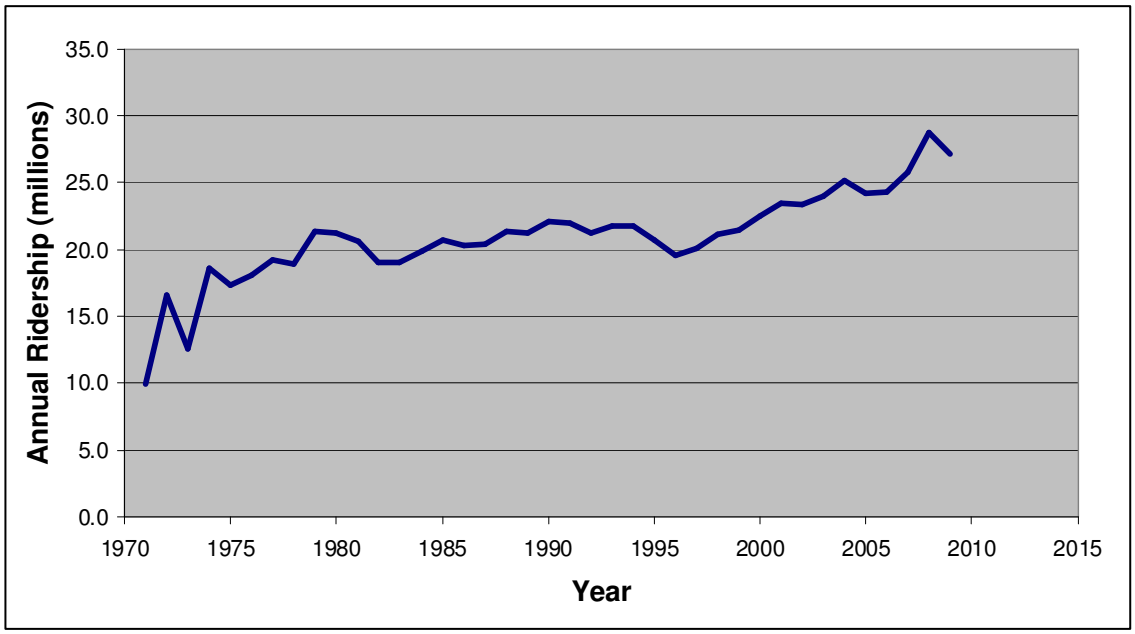

Figure 4 - 6 Amtrak Annual Ridership (1971 to 2009)

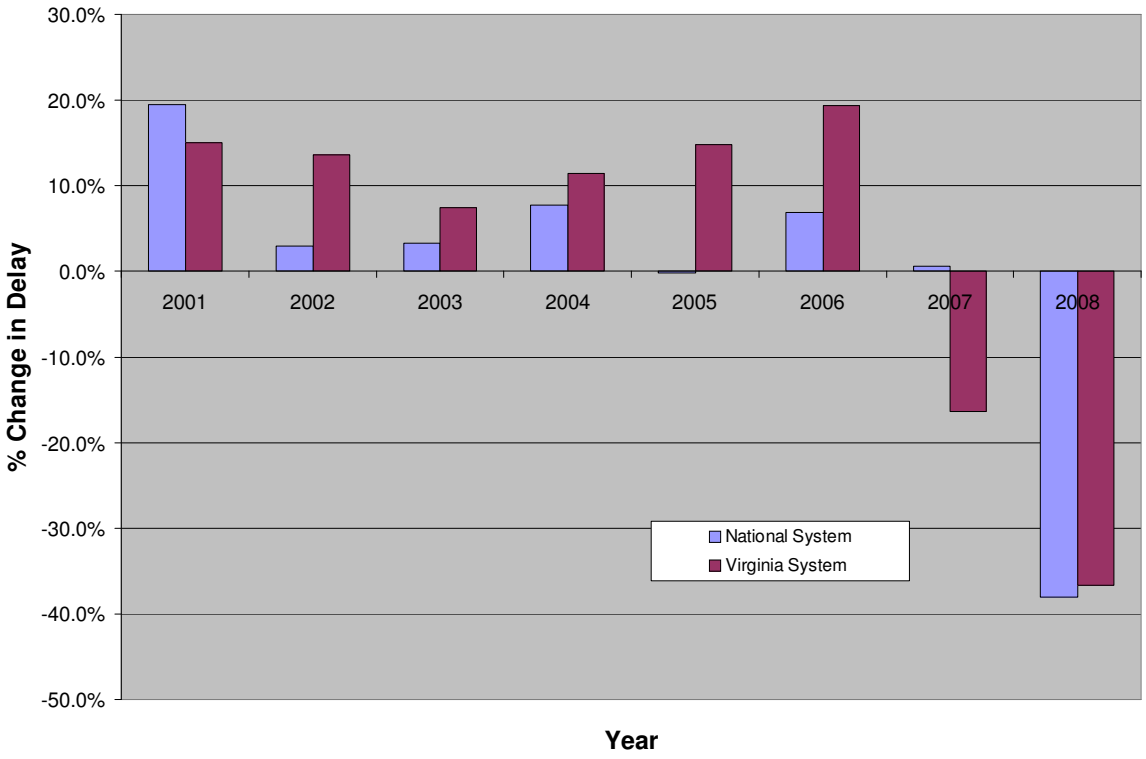

Figure 4 - 7 Amtrak Annual Delay Change from Previous Year (2001 - 2008)

The trend in annual delay for Amtrak trains is depicted in Figure 4-7, which is based on total minutes of delay for Amtrak trains within a year. For 2008, the national system experienced a 38.1 percent decrease and the Virginia system experienced a 36.6 percent decrease in total delay minutes. The recent decrease in delay within the Virginia system, coupled with the 2007 16.4 percent decrease, is a definite plus in the effort to achieve one of this Plan's congestion management goals of attracting passengers to the rail system from the highway system. Strategic investment in rail infrastructure can bring about this positive change.

4.4.2. Commuter Rail

According to the American Public Transportation Association (APTA), commuter rail transit services exist in 21 major metropolitan areas, and the number grows almost yearly. Commuter rail (also called metropolitan rail, regional rail, or suburban rail) is an electric or diesel propelled railway for urban passenger train service consisting of local short distance travel operating between a major city and adjacent suburbs. Figure 4-8 indicates the locations of commuter rail in the U.S. in 2005, including the Virginia Railway Express in Northern Virginia that serves Washington, D.C. Figure 4-9 lists the major commuter rail transit agencies in the nation with ridership, track miles, and number of stations. As can be seen from the figure, Chicago's METRA is the largest commuter rail agency in terms of track miles. However, New York's MTA LIRR is the largest in terms of annual ridership. Dallas's DART has the lowest amount of track miles and Anchorage's AARC has the lowest ridership.

Figure 4 - 8 Commuter Rail Locations in the United States (2005)

Primary City	Transit Agency	Track Miles	No. of Stations	Annual Ridership (1,000)	Annual Passenger Miles (1,000)
Anchorage, AK	Alaska Railroad Corporation (ARRC)	611.0	10	144.6	2,813.1
Baltimore, MD	Maryland Transit Administration (MTA)	471.0	42	6,884.1	209,155.1
Boston, MA	Massachusetts Bay Trans. Authority (MBTA)	648.4	126	37,890.2	755,587.5
Chicago, IL	Northeast IL Regional Commuter RR Corp. (METRA)	1,144.0	231	68,591.0	1,548,276.6
Chicago, IL	Northern Indiana Commuter Trans. District (NICTD)	130.4	20	3,802.4	106,356.4
Dallas, TX	Dallas Area Rapid Transit (DART)	20.7	4	1,324.7	15,343.7
Dallas, TX	Fort Worth Transportation Authority (The T)	22.6	5	826.4	13,007.9
Hartford, CT	Connecticut Department of Transportation (CDOT)	106.0	8	407.4	8,206.3
Los Angeles, CA	Southern California Regional Rail Authority (Metrolink)	640.1	54	10,693.3	359,938.2
Miami, FL	South Florida Regional Trans. Authority (TRI-Rail)	104.0	18	2,800.4	84,532.2
New York, NY	Metro-North Commuter Railroad Co. (MTA-MNCR)	805.2	109	74,267.2	1,551,190.5
New York, NY	MTA Long Island Rail Road (MTA LIRR)	701.1	124	95,519.0	1,925,735.6
New York, NY	New Jersey Transit Corporation (NJ TRANSIT)	1,016.4	167	72,613.8	1,982,312.5
Philadelphia, PA	Pennsylvania (PENNDOT)	144.4	12	249.9	16,441.0
Philadelphia, PA	Southeastern Pennsylvania Trans. Authority (SEPTA)	609.5	156	31,680.0	456,445.5
Portland, ME	Northern New England Passenger Rail Auth. (NNEPRA)	114.0	10	250.5	20,344.2
San Diego, CA	North County Transit District (NCTD)	96.0	8	1,432.5	40,139.5
San Francisco, CA	Peninsula Corridor Joint Powers Board (PCJPB)	136.7	33	8,120.9	202,708.4
Seattle, WA	Central Puget Sound Regional Transit Authority (ST)	146.0	9	1,268.0	31,876.8
Stockton, CA	Altamont Commuter Express (ACE)	90.0	10	640.6	33,279.3
Washington, D.C.	Virginia Railway Express (VRE)	190.0	18	3,654.3	109,225.8
	Total	**7,947.5**	**1,174**	**423,061.2**	**9,472,916.1**

Figure 4 - 9 Commuter Rail Agencies and System Data (2005)

Figure 4-10 provides an annual summary of revenue vehicles (railcars), capital expenditures, fare revenue (farebox), operating expenses, and the percentage of fare revenues to expenses. In the last two columns, which compare the fares to expenses, the percent of expenses covered by riders is found. It can be seen that ridership does not typically cover the full expenses of commuter rail, which means that a state or local municipality has to provide funds to handle the shortfall. It can be concluded that Virginia Railway Express (VRE) is exceeding the national average in the share of expenses covered by its collected fares.

Service must be operated on a regular basis by or under contract with a transit operator for the purpose of transporting passengers within urbanized areas, or between urbanized areas and outlying areas. Such rail service, using either locomotive hauled or self propelled railroad passenger cars, is generally characterized by multi-trip tickets, specific station to station fares, railroad employment practices and usually only one or two stations in the central business district.

Some commuter rail operators own all or part of the railroad right-of-way (sometimes purchased from freight railroads) on which they operate. Other commuter rail systems operate primarily or exclusively over tracks owned by freight railroads (such as VRE in Northern Virginia). Moreover, to avoid the time and expense of new rights-of-way acquisition, the vast majority of proposed new commuter operations and existing commuter passenger operators that want to extend their operations typically advocate using existing freight railroad rights-of-way.

Primary City	Transit Agency	Revenue Vehicles	Capital Expense ($1,000)	Fare Revenue ($1,000)	Operating Expenses ($1,000)	Fare % of Operating Expenses	Fare % of Operating + Capital Expenses
Anchorage, AK	Alaska Railroad Corporation (ARRC)	102	8,094.4	1,231.8	2,501.4	49.24%	11.63%
Baltimore, MD	Maryland Transit Administration (MTA)	153	22,062.6	28,949.5	68,203.4	42.45%	32.07%
Boston, MA	Massachusetts Bay Trans. Authority (MBTA)	460	105,169.4	98,790.0	219,670.1	44.97%	30.41%
Chicago, IL	Northeast IL Regional Commuter RR Corp. (METRA)	1,172	343,240.1	198,493.9	477,855.0	41.54%	24.17%
Chicago, IL	Northern Indiana Commuter Trans. District (NICTD)	68	29,656.6	15,739.8	31,343.1	50.22%	25.80%
Dallas, TX	Dallas Area Rapid Transit (DART)	36	5,009.3	1,036.1	18,990.1	5.46%	4.32%
Dallas, TX	Fort Worth Transportation Authority (The T)	17	3,075.2	802.3	8,220.2	9.76%	7.10%
Hartford, CT	Connecticut Department of Transportation (CDOT)	38	0.0	1,234.1	7,679.1	16.07%	16.07%
Los Angeles, CA	Southern California Regional Rail Authority (Metrolink)	188	34,945.9	47,807.9	110,729.2	43.18%	32.82%
Miami, FL	South Florida Regional Trans. Authority (TRI-Rail)	30	110,301.8	6,089.4	31,002.8	19.64%	4.31%
New York, NY	Metro-North Commuter Railroad Co. (MTA-MNCR)	1,078	455,310.6	437,673.6	711,795.9	61.49%	37.50%
New York, NY	MTA Long Island Rail Road (MTA LIRR)	1,158	710,829.0	442,300.3	944,483.7	46.83%	26.72%
New York, NY	New Jersey Transit Corporation (NJ TRANSIT)	1,141	282,628.2	297,650.7	660,791.3	45.04%	31.55%
Philadelphia, PA	Pennsylvania (PENNDOT)	12	14,037.9	2,733.9	9,083.6	30.10%	11.82%
Philadelphia, PA	Southeastern Pennsylvania Trans. Authority (SEPTA)	357	76,673.2	90,914.7	193,977.7	46.87%	33.59%
Portland, ME	Northern New England Passenger Rail Auth. (NNEPRA)	18	2,080.0	3,365.6	8,301.0	40.54%	32.42%
San Diego, CA	North County Transit District (NCTD)	35	4,393.6	5,774.1	15,441.9	37.39%	29.11%
San Francisco, CA	Peninsula Corridor Joint Powers Board (PCJPB)	153	65,393.0	21,968.3	67,276.9	32.65%	16.56%
Seattle, WA	Central Puget Sound Regional Transit Authority (ST)	69	70,727.3	3,052.9	20,983.1	14.55%	3.33%
Stockton, CA	Altamont Commuter Express (ACE)	21	4,558.8	2,992.8	10,992.0	27.23%	19.25%
Washington, D.C.	Virginia Railway Express (VRE)	86	11,344.6	19,439.5	40,071.5	48.51%	37.81%
	Total	**6,392**	**2,359,531.5**	**1,728,041.2**	**3,659,393.0**	**47.22%**	**28.71%**

Figure 4 - 10 Commuter Rail Agencies Revenue Data (2005)